



EXHIBIT 9

RF Exposure Guidelines for PCS and Cellular

Applicant: Northern Telecom Ltd.

For Certification on:

AB6ECELL

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To To Whom It May Concern
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From E. Quirin

NORTEL NETWORKS CONFIDENTIAL

Subject Health protection and e-cell Radiation hazards
Reference EQ/01020

This memo provides inputs with regard to the assessments of Health protection and radiation hazards expected from Nortel Networks e-cell (GSM 900 and GSM 1800).

1. Introduction

RTTE Directive (1999/5/EEC) health protection requirements cover the field of human exposure to radio frequency electromagnetic fields.

As there are currently no well established test specifications and requirements within Europe, it has been deemed sufficient to demonstrate compliance to the North American requirements (FCC OET Bulletin 65) through calculation as described below.

2. Radiation hazards**a. iBTS radiations**

The maximum radiated power level authorized by the EMC specifications (EN 301 489-1) is :

- -36 dBm (or $E=2.7$ mV/m) for frequencies between 30 MHz and 1 GHz,
- -30 dBm (or $E=5.4$ mV/m) for frequencies above 1 GHz.

According to FCC OET bulletin 65, the power density is linked to the E field by the relation $S=E^2/3770$.

As a consequence, the maximum power density radiated by the e-cell will be :

- $S=1.9*10^{-9}$ mW/cm² for frequencies between 30 MHz and 1 GHz,
- $S=7.9*10^{-9}$ mW/cm² for frequencies above 1 GHz.

The North American Maximum Permissible Exposure (MPE) levels for general population (uncontrolled exposure areas) are defined in the table below :

Frequency range (MHz)	MPE (S, mW/cm ²)
30 – 300	0.2
300 – 1500	f/1500
1500 – 12750	1.0

b. Radiation of a system

Considerations :

- E-cell configured with 2 Power Amplifiers (PA) in a sector, PAs configured to deliver maximum output power (2 Watts).
- Feeder losses # 1 dB.
- Antenna gain G=18 dBi # 63.

The power delivered to the antenna (per PA) is given by
 $P = E\text{-cell_power} - \text{Feeder_losses} \# 32 \text{ dBm}$ (or 1.6 Watts).

As described in FCC OET Bulletin 65, the power density can be estimated by $S = P \cdot G / 4\pi R^2$ where R is the distance to the source (the antenna).

The Maximum Permissible Exposure (MPE) level for uncontrolled access locations is $S_{\text{GSM } 900} = 0.6 \text{ mW/cm}^2$ and $S_{\text{GSM } 1800} = 1 \text{ mW/cm}^2$.

As a consequence, the safe distance approach is with the aforementioned considerations $R_{\text{GSM } 900} = 1.63 \text{ m}$ and $R_{\text{GSM } 1800} = 1.26 \text{ m}$.

This distance is the one at which the limit level will be reached in the main beam of the antenna and would usually be achieved by the fact that this antenna is mounted on a pole.

3. Conclusion

As demonstrated before, it is deemed that Nortel Networks iBTS complies to the general requirements (FCC OET bulletin 65) for health protection.

It should also be noted that exposures inside a building can be expected to be reduced by at least 10 to 20 dB due to the attenuation caused by building materials in the wall and roof of the building (source : FCC OET Bulletin 65).

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